

REMARKS

The title of the invention has been amended to correct misspelling.

On page 2 of the Action, claims 1-9 were rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2001-49244 (Chem. Abs. 134:186014). Also, claims 1-9 were rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2001-48875, JP 2000-321714, JP 2000-256665, JP 2000-256664, and Chem. Abs. CA121:235806 (Masahiro) in view of JP 2001-49244. In view of the rejections, claim 1 has been amended to add limitations of claim 2, and claim 2 has been amended to add additional limitations. Claims 5, 7 and 9 has been amended to correct a clerical error.

As recited in claim 1, a photochromic material of the invention comprises a compound having a ring opening quantum yield of 10^{-3} or lower, belonging to diheteroarylethene class, represented by the general formula [I] (see claim 1): wherein, in the general formula [I], A represents the substituents [i] or [ii] (see claim 1), and B represents the substituents [iii] or [iv] (see claim 1); wherein, in the substituents [i] and [ii], R^1 represents an alkoxy group, R^2 represents $-Q-Ar$, Q representing a direct bond or an arbitrary divalent group and Ar representing an aromatic hydrocarbon ring or an aromatic heterocycle which are optionally substituted, R^3 represents a hydrogen atom, an alkyl group, an alkoxy group, a halogen atom, a fluoroalkyl group, a cyano group, or an aryl group which is optionally substituted, and Y represents $-O-$ or $-S-$; and in the substituents [iii] and [iv], R^4 represents an alkoxy group, R^5 represents $-Q-Ar$, Q representing a direct bond or an arbitrary divalent group and Ar representing an aromatic hydrocarbon ring or an aromatic heterocycle which are optionally substituted, R^6 represents a hydrogen atom, an alkyl group, an alkoxy group, a halogen atom, a fluoroalkyl group, a cyano group, or an aryl group which is optionally substituted, and Z represents $-O-$ or $-S-$.

In particular, in the invention as recited in claim 1, the photochromic material comprises the compound having the structure represented by the general formula [I] (see claim 1). As a result,

the photochromic material of the invention has the ring opening quantum yield of 10^{-3} or lower. Accordingly, once the photochromic material develops a color upon irradiation of ultraviolet light through a ring opening reaction, it is possible to maintain the color in several hours. Therefore, it is possible to use the photochromic material of the invention for an application such as a display and marking.

JP 2001-49244 (Chem. Abs. 134:186014) has disclosed a photochromic material having a structure similar to that of the invention. However, there is no disclosure or suggestion that a compound having the specific structure of the invention, in which R^1 represents an alkoxy group, R^2 represents $-Q-Ar$, R^4 represents an alkoxy group, and R^5 represents $-Q-Ar$, has a ring opening quantum yield of 10^{-3} or lower. Therefore, from the disclosure of JP 2001-49244 (Chem. Abs. 134:186014), it is not obvious to a person with an ordinary skill in the art that the specific structure of the invention has a ring opening quantum yield of 10^{-3} or lower.

Each of JP 2001-48875, JP 2000-321714, JP 2000-256665, JP 2000-256664, and Chem. Abs. CA121:235806 (Masahiro) has disclosed a photochromic material having a structure similar to that of the invention. However, similar to the argument above, any of the cited references fail to disclose or suggest that a compound having the specific structure of the invention, in which R^1 represents an alkoxy group, R^2 represents $-Q-Ar$, R^4 represents an alkoxy group, and R^5 represents $-Q-Ar$, has a ring opening quantum yield of 10^{-3} or lower. Therefore, from the disclosures of the cited references, it is not obvious to a person with an ordinary skill in the art that the specific structure of the invention has a ring opening quantum yield of 10^{-3} or lower.

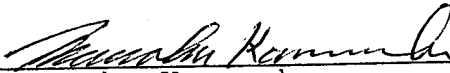
As explained above, the cited references do not disclose or suggest the features of the invention. Even if the cited references are combined, the invention is not obvious from the cited references.

Reconsideration and allowance are earnestly solicited.

One month extension of time is hereby requested. A credit card authorization form in the amount of \$120.00 is attached herewith for the one month extension of time.

Respectfully submitted,

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